

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of :
Tetsuroh NAKAMURA, et al. :
Serial No.: : Group Art Unit:
Filed: February 21, 2002 : Examiner:
For: LIGHT SOURCE FOR IMAGE READING APPARATUS AND IMAGE READING
APPARATUS

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, DC 20231

Sir:

Prior to examination of the above-referenced application, please amend the application as follows:

IN THE SPECIFICATION:

Please amend the last paragraph, on page 25, continuing on page 26 as following:

To prevent phenomena like cross talk and flare, the fiber bundle 144 is made to meet the following relation. That is, as shown in FIG. 26, outside diameter Y and its length N and angular aperture ω are so set that length (outside diameter) Y of one side of fiber bundle 144 by length N of optical fiber 140 is smaller than the tangent value of angular aperture ω , that is, the angle between central axis Z of the optical fiber 140 and incident light V .

A plurality of individual optical fibers 140 with a light absorbing layer 143 formed like that or a plurality of fiber bundles 144 with the light absorbing layers 141 formed are placed into

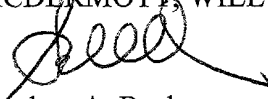
a frame, with the longitudinal direction in the vertical position and placed side by side until the frame is filled up, and an adhesive is filled into the gaps between the optical fibers 140 and solidified, and the frame is removed, the frame of a specific form being open on upper side and on the down side. The specific form of the frame is a form required for image reading apparatuses such as copying machine using condenser lens 14 to perform their intrinsic functions and is generally a strip perpendicular to the document carrying direction. Furthermore, as shown in FIG. 27, if necessary for molding, individual optical fibers 140 or fiber bundles 144 may be sandwiched in the frame between a substrates 142 of opaque glass, resin or the like so that the substrates 142 and the individual optical fibers 140 or fiber bundles 144 are bonded to each other.

REMARKS

The wording in the last paragraph on page 25 is amended to conform with what is depicted in Figure 26 of the drawings. No new matter is added. Entry of this Preliminary Amendment is respectfully requested.

Respectfully submitted,

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MARKED-UP VERSION OF SPECIFICATION

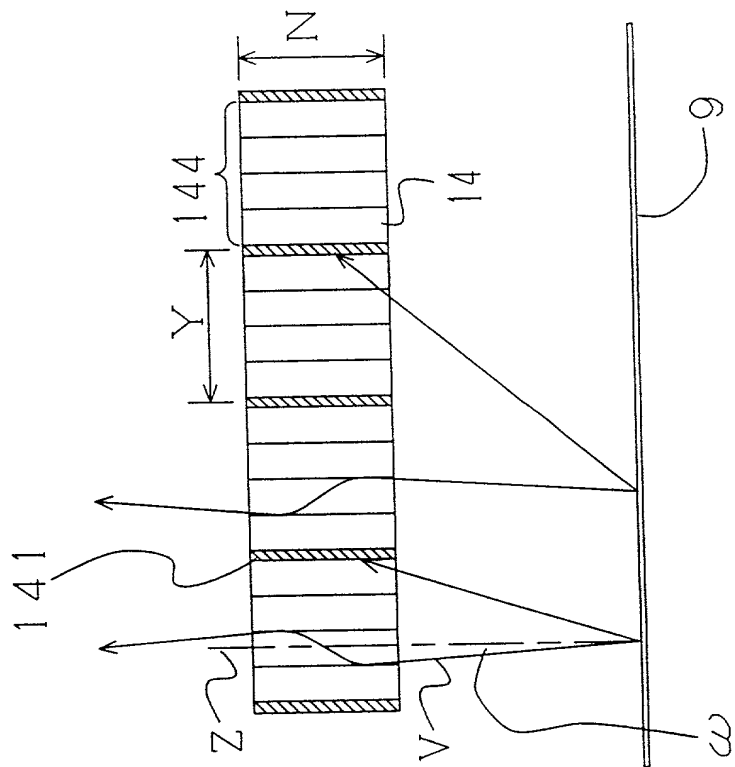
IN THE SPECIFICATION:

Please amend the last paragraph, on page 25, continuing on page 26 as following:

To prevent phenomena like cross talk and flare, the fiber bundle 144 is made to meet the following relation. That is, as shown in FIG. 26, outside diameter Y and its length N and angular aperture ω are so set that length (outside diameter) Y of one side of fiber bundle 144 by length N of optical fiber 140 is [larger]smaller than the tangent value of angular aperture ω , that is, the angle between central axis Z of the optical fiber 140 and incident light V.

A plurality of individual optical fibers 140 with a light absorbing layer 143 formed like that or a plurality of fiber bundles 144 with the light absorbing layers 141 formed are placed into a frame, with the longitudinal direction in the vertical position and placed side by side until the frame is filled up, and an adhesive is filled into the gaps between the optical fibers 140 and solidified, and the frame is removed, the frame of a specific form being open on upper side and on the down side. The specific form of the frame is a form required for image reading apparatuses such as copying machine using condenser lens 14 to perform their intrinsic functions and is generally a strip perpendicular to the document carrying direction. Furthermore, as shown in FIG. 27, if necessary for molding, individual optical fibers 140 or fiber bundles 144 may be sandwiched in the frame between a substrates 142 of opaque glass, resin or the like so that the substrates 142 and the individual optical fibers 140 or fiber bundles 144 are bonded to each other.

FIG.26



$$\left\{ \frac{S}{N} \right\} \tan \omega$$